WHAT IS CLAIMED IS:

1. An image processing device comprising

at least one processor or circuit configured to function as:

an image acquisition unit configured to acquire an image including a subject through a lens unit;

a distance information acquisition unit configured to acquire distance information indicating a distance to the subject;

a layer information generation unit configured to generate layer information on a layer for each distance based on the distance information; and

a setting unit configured to display a setting value of the layer information capable of being set by a user,

wherein the layer information includes at least one of number of the layers or width of the layer in a distance direction;

wherein the display of the setting value is performed in accordance with lens information of the lens unit, wherein the at least one processor or circuit is configured to

acquire the lens information of the lens unit, the lens information including at least one of a focal length, an in-focus position, and aperture information, and

to calculate a distance measurable range L and a minimum resolution width M of a subject distance, wherein the displayed setting value is the number of the layers and/or the width of the layers calculated based on the distance measurable range L and a minimum resolution width M.

2. The image processing device according to claim 1, wherein the image acquisition

unit includes an imaging element in which a plurality of photoelectric conversion units receiving light beams passing through different pupil regions of the lens unit are disposed for each pixel, and is capable of acquiring the distance information based on a phase difference between outputs of the plurality of photoelectric conversion units.

3. The image processing device according to claim 2, wherein the image is acquired by adding the outputs of the plurality of photoelectric conversion units.

4. The image processing device according to claim 1, wherein the layer information generation unit also converts distance information of a distance at which the subject does not exist into the layer information.

5. The image processing device according to claim 1, wherein the lens information includes at least one of a focal length, an in-focus position, and aperture information.

6. The image processing device according to claim 1, wherein the layer information for each distance is generated in a case where the lens information has changed by a predetermined amount or more.

7. The image processing device according to claim 1, wherein the layer information generation unit changes the reference for generating the layer information in accordance with the image.

8. The image processing device according to claim 1, wherein the reference includes

the number of layers and a width of the layer in a distance direction.

9. The image processing device according to claim 1, wherein the layer information generation unit generates a histogram based on the distance information and generates the layer information for each distance based on the histogram.

10. The image processing device according to claim 1, wherein the layer information generation unit recognizes the subject by an image recognition unit to generate the layer information for each distance in accordance with the recognized subject.

11. The image processing device according to claim 10, wherein the layer information generation unit changes a width of the layer in a distance direction for each distance in accordance with a type of the recognized subject.

12. The image processing device according to claim 10, wherein the layer information generation unit is capable of selecting the type of subject capable of being recognized.

13. The image processing device according to claim 1, wherein the layer information generation unit generates the layer information based on the image of a plurality of frames.

14. The image processing device according to claim 1, wherein the layer information generation unit generates the layer information for each distance based on the lens information of the lens unit and the distance information.

15. The image processing device according to claim 1, wherein the layer information generation unit calculates a minimum resolution in the layer information for each distance based on the lens information of the lens unit.

16. The image processing device according to claim 1, wherein the setting unit is capable of setting a synthesized image insertion region for inserting a synthesized image and insertion layer information, which is layer information for inserting the synthesized image, for the image.

17. The image processing device according to claim 1, wherein the layer information generation unit generates the layer information based on the distance information in a case where an acceleration of the image acquisition unit becomes a predetermined value or more.

18. The image processing according to claim 1, wherein the layer information generation unit generates the layer information based on the distance information when a subject at a predetermined distance or more in the image has moved by a predetermined value or more.

19. An image processing method comprising:

acquiring an image including a subject through a lens unit;

acquiring distance information indicating a distance to the subject;

generating layer information on a layer for each distance based on the distance

information; and

setting a reference for generating the layer information and switching display of a setting value capable of being set in accordance with the lens information of the lens unit,

wherein a setting unit configured to display the setting value of the layer information capable of being set by a user,

wherein the layer information includes at least one of number of the layers or width of the layer in a distance direction;

wherein the display of the setting value is performed in accordance with lens information of the lens unit, wherein the at least one processor or circuit is configured to

acquire the lens information of the lens unit, the lens information including at least one of a focal length, an in-focus position, and aperture information, and

to calculate a distance measurable range L and a minimum resolution width M of a subject distance, wherein the displayed setting value is the number of the layers and/or the width of the layers calculated based on the distance measurable range L and a minimum resolution width M.

20. A non-transitory computer-readable storage medium configured to store a computer program comprising instructions for executing following processes:

acquiring an image including a subject through a lens unit;

acquiring distance information indicating a distance to the subject;

generating layer information on a layer for each distance based on the distance information; and

setting a reference for generating the layer information and switching display

of a setting value capable of being set in accordance with the lens information of the lens unit,

wherein a setting unit configured to display the setting value of the layer information capable of being set by a user,

wherein the layer information includes at least one of number of the layers or width of the layer in a distance direction;

wherein the display of the setting value is performed in accordance with lens information of the lens unit, wherein the at least one processor or circuit is configured to

acquire the lens information of the lens unit, the lens information including at least one of a focal length, an in-focus position, and aperture information, and

to calculate a distance measurable range L and a minimum resolution width M of a subject distance, wherein the displayed setting value is the number of the layers and/or the width of the layers calculated based on the distance measurable range L and a minimum resolution width M.